

**Environmental Restoration
Five-Year Review Report**

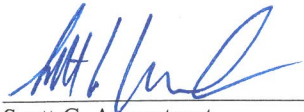
**Fifth Five-Year Review Report
For
Bonneville Power Administration
Ross Complex
Vancouver, Washington
Clark County**

March 2019

**PREPARED BY:
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Date:



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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
BaP	Benzo(a)Pyrene
BPA	Bonneville Power Administration
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
DCE (1,1)	Dichloroethylene
DOB	District Office Building
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
FFA	Federal Facility Agreement
FYR	Five-Year Review
HPAH	High Molecular Weight Polynuclear Aromatic Hydrocarbon
MCL	Maximum Contaminant Level
MFS	Minimum Functional Standards
MOA	Memorandum of Agreement
MTCA	Model Toxics Control Act
ICs	Institutional Controls
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priority List
OUA	Operable Unit A
OUB	Operable Unit B
PCBs	Polychlorinated Biphenyls
PCP	Pentachlorophenol
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/ Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
TCA	Trichloroethane
TSCA	Toxic Substances Control Act
UV	Ultraviolet
VOCs	Volatile Organic Compounds

I. EXECUTIVE SUMMARY

The Bonneville Power Administration has maintained a 250 acre site known as the Ross Complex in Vancouver, Washington since 1939. This active facility is critical to BPA's control of power transmission, testing, inventory management and training. Concern over possible site pollution led to the facility being listed on the National Priorities List in 1989. After extensive site characterization, the remedy for the BPA Ross Complex Superfund site included excavation, removal and /or treatment, and capping of contaminated soils, institutional controls and monitored natural attenuation of groundwater. The final Remedial Action Reports for Operable Units A and B (January 1996 and April 1995 respectively) documented the completion of all actions. The site was deleted from the NPL on September 23, 1996.

The first Five-Year Review was completed in September 1999 and recommended: That a long-term strategy to identify and implement specific processes to strengthen institutional controls at the Complex be developed jointly by EPA and BPA and put into place; and that an Explanation of Significant Differences (ESD) should be prepared to document facility-wide institutional controls. The review further determined that continued groundwater monitoring was not necessary due to the low levels of groundwater contaminants (nearly at or well below the MCL) and the lack of on-site or nearby off-site users. Groundwater would not be subject to future five-year reviews.

This is the fifth Five-Year Review and focused on the continued adequacy of institutional controls applicable to the Fog Chamber Dump Trench Areas 1 and 2, Cold Creek Fill, Ross Substation/Capacitor Yard and the Wood Pole Storage Area East. **The review concludes that the remedies for both Operational Units A and B remain protective and institutional controls remain in place.**

EPA's Human Exposure Environmental Indicator Status for the Site remains "Long Term Human Health Protection Achieved." On-site exposures that posed unacceptable risk to human health were addressed by the excavation and off-site removal and/or capping of contaminated soils, plus implementation and maintenance of Institutional Controls where necessary.

EPA's Groundwater Migration Environmental Indicator is not applicable for this site because no groundwater required action at this site.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Bonneville Power Administration Ross Complex (USDOE)		
EPA ID: WA 1891406349		
Region: 10	State: WA	City/County: Vancouver/Clark
SITE STATUS		
NPL Status: Deleted		
Multiple OUs? Yes (Two)	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: Other Federal Agency If "Other Federal Agency" was selected above, enter Agency name: Bonneville Power Administration		
Author name (Federal or State Project Manager): Andrew B. Chang		
Author affiliation: Bonneville Power Administration		
Review period: September 26, 2018 – March 29, 2019		
Date of site inspection:		
Type of review: Statutory		
Review number: 5		
Triggering action date: 09/08/2014		
Due date (five years after triggering action date): 09/08/2019		

Five-Year Review Summary Form, cont'd.

Issues:

No significant issues were identified during this five-year review.

Recommendations and Follow-up Actions:

None.

Continue to implement institutional controls and conduct quarterly inspection of sites with caps, fences and institutional controls to help ensure continued effectiveness of site remedies.

Protectiveness Statement(s):

Operational Unit A (OUA): The remedy at OUA is protective of human health and the environment.

Operational Unit B (OUB): The remedy at OUB is protective of human health and the environment.

Site-Wide Protectiveness: Remedies site wide continue to be protective of human health and the environment.

Long-Term Protectiveness:

Long-term protectiveness of the remedial action is being ensured by the maintenance of institutional controls addressed in the ESD agreement.

Other Comments:

In 2016, residual contamination in the OUA Institutional Control Area known as the Wood Pole Storage East (ICA#5) was removed after consultation with EPA and Washington Department of Ecology. A total of 2,159 tons of rock and soil with low levels of HPAH and PCP were removed to approved landfill. Randomly selected confirmation samples showed Non-Detect for the contaminants of concern. BPA is currently working with EPA to evaluate the confirmation sampling data with the goal of removing the institutional controls in this area.

II. INTRODUCTION

1.1 Purpose.

The purpose of this fifth statutory Five-Year Review is to evaluate the implementation and performance of actions selected in the Records of Decision (RODs) for Operable Units A (OUA) and B (OUB) and will continue to be protective of public health and the environment. The BPA/Ross Complex Superfund site was deleted from the National Priority List (NPL) on September 23, 1996. The methods, findings, and conclusions of reviews are documented in five-year review reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

Five-Year Reviews continue to be conducted at BPA/Ross Complex due to the fact that waste has been left in place and there are institutional control requirements. The timing of this review is triggered by the fourth Five-Year Review completed in 2014. The scope of this review covers selected remedies at both of the Operable Units where hazardous materials have been left in place and, in particular, the adequacy of institutional controls/restrictions which remain on use and/or exposure.

1.2 Authority Statement.

The Bonneville Power Administration (BPA) has conducted this review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9621(c); the National Contingency Plan (NCP), 40 CFR 300.400(f)(4)(ii); Executive Order 12580 (January 23, 1987); and Section 19.1 of the Federal Facility Agreement (FFA) for BPA's Ross Complex dated May 1, 1990. CERCLA §121 states: *"If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."*

EPA interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

This document is consistent with EPA guidance documents: OSWER Directive No. 9355.7-03B-P (June 2001). The Bonneville Power Administration is the lead agency for remediation of the Ross Complex and has performed extensive remedial action under its own authorities. Under the Federal Facility Agreement (FFA) between BPA, EPA and the Washington State Department of Ecology (Ecology), BPA must ensure that the corrective actions taken at specific sites are consistent with appropriate environmental standards and are protective of human health and the environment. It is important to note that cleanup and remediation activities performed at the Ross Complex comply not only with the federal requirements of CERCLA but also the state requirements of the Model Toxics Control Act (MTCA).

Consistent with the FFA, the project manager for the EPA has participated in this review. This review was conducted from January 2019 through March 2019 and is hereby documented in this report. This review was limited only to those sites remediated under the RODs where hazardous substances have been left in place, and in particular the institutional controls applicable to those sites.

2.0 Site Chronology

Table 1: Chronology of Site Events

Event	Date
Site Discovery	06/01/1981
Removal Negotiations	11/15/1984
Preliminary Assessment	04/01/1986
Site Inspection	11/02/1988
HRS Package	06/23/1989
Proposed to NPL	07/14/1989
Final Listing on NPL	11/21/1989
IAG Negotiations	11/20/1989
Federal Facility Agreement	05/01/1990
Ecological Risk Assessment	03/19/1993
Risk Health Assessment	03/19/1993
FF RIFS (OUB)	05/06/1993
Administrative Records	05/06/1993
Record of Decision (OUA)	05/06/1993
FF RIFS (OUA)	09/29/1993
Record of Decision (OUB)	09/29/1993
FF RD (OUB)	05/27/1994
FF RD (OUA)	08/08/1994
FF RA (OUB)	04/27/1995
FF RA (OUA)	01/09/1996
Deletion from NPL	09/23/1996
Five Year Review	09/09/1999
Explanation of Significant Differences	01/18/2001
Second Five Year Review	08/24/2004
Third Five Year Review	09/08/2009
Fourth Five Year Review	03/31/2014
ICA #5 Wood Pole Storage Area Removal	02/04/2016

III. BACKGROUND

1.1 Physical Characteristics

The BPA Ross Complex is a 250-acre site located in the City of Vancouver, Washington, approximately 2.7 miles north of the Columbia River and 1.7 miles east of Vancouver Lake. The site address is 5411 NE Highway 99, Vancouver, Washington, which is located in Clark County.

The site is located on an ancient alluvial terrace. Creeks and streams in the area have been cutting into the terrace deposits, creating incised channels. Elevations across the site range from greater than 250 feet above mean sea level to approximately 40 feet above mean sea level. The surface gradient generally slopes to the west across the site, with localized steep slopes descending toward Cold Creek to the north and Burnt Bridge Creek to the southwest. These two streams border the site with Cold Creek forming

the northern border of the site and Burnt Bridge Creek bordering the southwestern side of the site. Cold Creek, a tributary to Burnt Bridge Creek, flows into Vancouver Lake.

A perched water table is located in the eastern and central portions of the site ranging from between 10 and 70 feet below ground surface. A deep aquifer has also been identified at or near the top of the Upper Troutdale Formation that underlies the site from 80 to 180 below ground surface. Ground water flow in the deep aquifer is toward the southwest.

1.2 Land and Resource Use

The site is an active facility that has been owned and operated by the BPA since 1939 to coordinate the distribution of hydroelectric power generated by the Federal Columbia Power System to regions throughout the Pacific Northwest. Since its construction, the site has provided research and testing facilities, maintenance and construction operations and waste storage and handling operations for BPA.

1.3 History of Contamination

Maintenance activities at the Ross Complex have routinely involved handling transformer oils containing polychlorinated biphenyls (PCBs), and organic and inorganic compounds associated with the storage of preserved wood transmission poles, paints, solvents and waste oils. Testing and laboratory activities include the use of heavy metals and other organic and inorganic compounds.

The Site was listed on the National Priorities List in November 1989 based on the presence of volatile organic compounds (VOCs) in groundwater and the Site's proximity to the City of Vancouver's drinking water supply. As a result of the listing, and pursuant to a Federal Facility Agreement (FFA) signed by BPA, EPA and Ecology on May 1, 1990, BPA conducted a Remedial Investigation/Feasibility Study (RI/FS) to determine the nature and extent of contamination at the Site and to evaluate alternatives for cleanup of contaminated areas.

1.4 Initial Response

The RI field investigation began in the summer of 1991 and was completed in September 1993. It included the collection and chemical analysis of surface and subsurface soil, water, sediment, and groundwater in an effort to characterize the nature and extent of contamination at the Site. Initially, the RI was designed to address the entire Site as one operable unit (OU). However, during the summer of 1991, BPA in conjunction with EPA and Ecology decided that the Site would be divided into two separate OUs (OUA and OUB) to facilitate the Superfund process.

The OUA RI addressed potential surface soil contamination at 21 different waste units on the Ross Complex. The OUB RI focused on characterization of subsurface soils in two waste units and also included characterization of the shallow perched water table, the deep groundwater aquifer beneath the Site, and surface water and sediments in Cold Creek and Burnt Bridge Creek

IV. RESPONSE ACTION SUMMARY

1. Operable Unit A (surface).

The remedial investigation for OUA evaluated the nature and extent of soil contamination at 21 surface waste units. Results from the Baseline Risk Assessment indicated that CERCLA remedial action was necessary for contaminated soil at four waste units, the Wood Pole Storage Area East, the Ross

Substation and Substation Capacitor Yard, and the Capacitor Testing Laboratory. The ROD for OUA was signed on May 6, 1993.

1.1 The Wood Pole Storage Area East

This 4.2-acre unit stored pressure-treated transmission poles before prior to pole installation. Historically, these poles were purchased from off-site treaters with PCP and /or creosote. While in storage at the Unit, contaminants dripped from the poles onto surface soils. Heavy polycyclic aromatic hydrocarbons (HPAH's) and pentachlorophenol (PCP) were identified as contaminants of concern. Both are considered to be carcinogenic. HPAH's were detected in soils from the surface to a maximum depth of three feet with the highest concentration being 193 mg/kg. PCP was detected as a surface contaminant with the highest level detected at 140 mg/kg. Soil concentrations for both contaminants were primarily found immediately below the poles in the pole stack areas; roadways were only slightly contaminated.

The selected remedy for the Wood Pole Storage Area was ex-situ bioremediation with geochemical enhancements (UV light, ethanol and hydrogen peroxide). The remedial action objectives or targeted cleanup level was 1 ppm MTCA Method A for HPAH's and 8 ppm MTCA Method B for pentachlorophenol (PCP). Alternative cleanup levels were established should the technology fail to achieve the primary cleanup goals.

During the fall of 1994 a temporary treatment facility (tent) was erected and a total of 2,300 cubic yards of material was excavated and stockpiled. Soil treatments were concluded on November 30, 1995. Of the 2,300 cubic yards excavated from the pole yard, about 700 cubic yards failed to meet the targeted cleanup level even though contaminant levels were reduced by 80% for both HPAH and PCP. After treatment, this material was placed in thin layer in the southwest corner of the pole yard. A clean cap was then applied over the entire 4.2 acre pole yard. The cap, 6 inches thick and totaling 3000 cubic yards, was completed on January 8, 1996.

With the clean gravel cap in place there are no restrictions on surface use anywhere in the Wood Pole Yard. Institutional controls are maintained only for the southwest corner of the yard that contains the residual contamination. At this location, institutional controls are limited to restrictions on digging.

The Southwest corner of the Wood Pole Storage Yard East is subject to the five-year review.

1.2 The Ross Substation and Substation Capacitor Yard

The Ross Substation is a fenced, 10-acre location in the central portion of the Complex. The Capacitor Yard is located in the southwestern corner of the substation and is itself fenced off from the remainder of the substation yard. Because of their direct physical relationship and operational interdependence these two waste units are addressed together.

Oil-filled electrical equipment, i.e. transformers, located within the substation proper contains PCBs in concentrations below 50 ppm. The original capacitors located in the capacitor yard contained 2 to 3 gallons of very high concentration PCB liquid. Historically, faulty capacitors and oil-filled equipment had released PCB oils to the graveled surface of the substation and capacitor yard. The only compound of concern was PCB soil contamination. The remedial investigation found that the PCB contamination was limited to surface soils with the highest concentration of 16 mg/kg in the substation and 130 mg/kg in the capacitor yard.

Because the substation and capacitor yard are fenced and isolated from any residential areas, the remedial action objective specified in the ROD was the MTCA industrial cleanup level of 10 ppm for PCBs. The remedy selected for the Ross Substation and Capacitor Yard consisted of excavation and off-site disposal at a TSCA approved landfill of PCB-contaminated soil above 10 ppm, plus institutional controls to restrict access and limit future land use.

In January 1994 the PCB contaminated soil was removed from the substation yard. A total of 15 tons of soil was removed and disposed of at Chemical Waste Management's TSCA- permitted landfill in Arlington, Oregon. Sampling confirmed no remaining PCBs in the soil.

Cleanup of the capacitor yard was delayed until the summer when the old PCB capacitors were scheduled to be replaced with new, non-PCB equipment. Although not required by the ROD, BPA chose to replace the PCB electrical equipment in order to eliminate the source of potential future contamination.

The cleanup began on June 1, 1995. A total of 2,300 tons of PCB contaminated soil; equipment and concrete footings were removed from the capacitor yard. All material removed was disposed of at Chemical Waste Management's TSCA approved landfill in Arlington, Oregon. All contaminated soil was removed down to non-detection levels except for a small area around some electrical bus work that interconnected the capacitor groups. In that area, PCB contaminated soil of up to 10 ppm was left in place. Remediation of the Capacitor Yard was completed in August 1995. Restoration of the substation capacitor yard was completed on October 23, 1995, with the energization of the new non-PCB capacitors. Institutional controls are maintained for the Ross Substation and Capacitor yard that contain residual contamination. Institutional controls are limited to restrictions on digging.

Although the source of PCB contamination was removed, the Ross Substation and Substation Capacitor Yard is subject to the Five -Year Review because the site was cleaned up to industrial cleanup levels and therefore is not available for unlimited use and unlimited exposure.

1.3 The Capacitor Testing Laboratory.

This facility is located in the center of the Ross Complex and is now used as a storage building. The laboratory, used to stress test PCB capacitors, was dismantled in 1984. Reportedly, while the laboratory was in operation, insulating fluids containing PCBs spilled onto the concrete floor as well as onto the dirt and gravel beyond the garage door. Two earlier cleanup actions took place whose results could not be verified.

During the Remedial Investigation surficial PCB soil contamination was found on the east, southeast and southwest areas outside the capacitor test laboratory at concentrations of up to 42 ppm. The selected remedy in the ROD was excavation and offsite and off-site disposal of contaminated soil at a TSCA approved landfill. Because of the location of the capacitor test laboratory within the Complex, the remedial action objective was the MTCA residential cleanup level of 1 ppm.

Excavation began on January 6, 1994, and was completed on January 27, 1994. A total of 229 tons of contaminated soil was removed from the area adjacent to the Capacitor Test Lab. All contaminated material was disposed of at the Chemical Waste Management TSCA approved landfill in Arlington, Oregon. Soil samples were analyzed using EPA Method 8080 to provide formal confirmation of

compliance with the 1 ppm target cleanup level and then the area was graded with clean backfill. Although not part of the selected remedy, the entire area was later blacktopped to meet other operational needs.

The Capacitor Testing Laboratory is not subject to the Five -Year Review because residential cleanup levels were achieved and because the practice that resulted in the PCB contamination has been discontinued.

2. Operable Unit B (Subsurface, ground water and surface water).

The remedial investigation for the subsurface unit, OUB evaluated the nature and extent of contamination in the subsurface soils at three locations: the Fog Chamber Dump, Trench Area 1& 2 and the Cold Creek Fill. The investigation also included an evaluation of the groundwater and the two surface streams, Cold Creek and Burnt Bridge Creek. The OUB ROD was signed on September 29, 1993.

2.1 Fog Chamber Dump, Trench Area 1

This unit was an open pit dump, encompassing about 66,000 square feet that was used between 1942 and approximately 1966. Waste debris was observed from 1.5 to 12 feet deep in the general disposal area and as deep as 22.5 feet in an isolated area. Soil samples collected from the debris areas contained concentrations of antimony, arsenic, copper, lead, HPAHs, PCBs and dioxin and furans above background and regulatory levels. The maximum PCB and lead concentrations were 30,000 ppm and 4,210 ppm, respectively.

Groundwater monitoring in this area did not indicate that Trench Area 1 contaminants were present. This is due to the fact that the contaminants are relatively immobile and the depth of the vadose zone between the contaminated material and the deep aquifer is approximately 100 feet.

Based on environmental considerations and BPA's intended use of this area for storage, the remedy selected was installation of a minimal functional standards (MFS) cap with institutional controls to restrict access and limit future land use. The MFS cap was selected because the cap design provided a cost-effective means of minimizing surface water infiltration thereby limiting the potential for groundwater contamination and because it eliminates the potential for human contact. Access controls were achieved by installing a permanent security fence with a barbed wire top. Warning signs, which state that digging is prohibited, are posted on the fence around the perimeter of the landfill. The fence is posted inside and out. Construction of the cap began on September 19, 1994 and was completed on October 19, 1994. Installation of the security fence was completed on October 19, 1994. Land use at this location is limited to storage only.

On-site environmental personnel inspect the cap on a regular basis. Sampling and analysis of a down gradient well conducted in February 1999 did not show any change in groundwater conditions.

The Fog Chamber Dump, Trench Area 1, is subject to the Five-Year Review because waste has been left in place and there are restrictions on the use of the land.

2.2 Fog Chamber Dump, Trench Area 2

This unit is adjacent to Trench Area 1 and contains concentrations of lead and other metals that exceeded state cleanup levels. These metals, which were not laterally extensive, were found in association with buried solid wastes such as wires and lead-coated cables located between 1.5 feet and 3.5 feet deep. Contaminant concentrations were considered to be associated with solid waste rather than from wastes generated by industrial processes.

Because this contamination is in isolated locations and is below the surface, the risk assessment determined that, in its present condition, this area did not pose a risk to human health or the environment through either direct contact or potential groundwater contamination. The selected remedy in the ROD was institutional controls consisting of restrictions on land use activities that might disturb subsurface contamination. Institutional controls are maintained for the Fog Chamber Dump, Trench Area 2.

The Fog Chamber Dump, Trench Area 2, is subject to the Five-Year Review because waste has been left in place and because there are restrictions on the use of the land. At this location, institutional controls are limited to restrictions on digging.

2.3 Cold Creek Fill Area

This unit was an engineered fill that was created long before the NPL listing. This area was filled, compacted and graded over time with soil obtained from various construction activities at the site completed prior to the RODs. The uppermost layers of the fill contain clean fill material. Elevated soil contaminant concentrations were found in limited isolated locations between 5 and 25 feet below the surface but were not laterally extensive. Cold Creek itself is in a culvert that lies at the bottom of the fill, in some locations as much as 80 feet below the surface.

Access to this area is restricted by fencing on the north and south sides and is topographically restricted on the west side due to a steep slope. The baseline risk assessment did not show a risk to human health or the environment from this waste unit. Migration of contamination is unlikely in this area since the types of contaminants (PCBs and HPAHs) are relatively immobile and the soils contain low permeability characteristics due to engineered controls. BPA's intended future use of this area is for construction material and equipment storage. Considering this, a determination of **no further action** was made for the Cold Creek Fill.

The Cold Creek Fill is included in the 5 Year Review because waste has been left in place and because there are restrictions on the use of the land.

2.4 Ground Water

The main focus of the Remedial Investigation for OUB was potential ground water contamination. It was the discovery of solvent contamination in the shallow groundwater, as well as the site's proximity to the City of Vancouver's Well Field # 3 that resulted in the Complex being put on the National Priorities List in November 1989.

Groundwater wells were installed in the shallow perched water table and the deep aquifer and were monitored on a quarterly basis from the fall of 1991 to the summer of 1993. The Remedial Investigation demonstrated that the shallow groundwater, which contained the highest levels of TCA, did not communicate with the deep aquifer but flowed instead to Cold Creek through a series of seeps.

Groundwater analysis conducted during eight quarterly sampling events showed a downward trend in contaminant levels for all monitoring wells. The OUB ROD required continued biannual groundwater monitoring for four key onsite wells for a period of two to five years. After two additional years of groundwater sampling (4 rounds), the results indicated stable groundwater conditions. In the shallow well (MW-4A), the levels of TCA had decreased by several orders of magnitude and were actually well below the MCL. In the deep wells, only one (MW-13B) showed a slight exceedance of the MCL for 1,1-DCE. From September 1991 to December 1995, levels of 1,1-DCE fluctuated from 1 to 14ppb with an MCL of 7 ppb. No other deep well showed an exceedance for any of the contaminants of concern. The location of the ground water monitoring wells is depicted in Attachment A.

In conjunction with the first Five – Year Review, BPA analyzed an additional set of groundwater samples for the four wells of concern (MW-4A, MW-13B, MW-14B & MW-16B) in February 1999. As with previous sampling events, there was a continued and downward decline in contaminant levels. With a reading of 8 ppb DCE, MW-13B showed a slight exceedance of the 7 ppb MCL for that contaminant. However, DCE levels in this well have hovered at or below the MCL for the past five years. TCA levels in MW-4A also showed a steady decline with the latest readings of only 0.01 ppm, well below the maximum contaminant level of 0.2 ppm

A total of 33 groundwater-monitoring wells were installed at the site. Of that total, 20 wells were decommissioned in 1997 following state procedures for well abandonment. The remaining 13 monitoring wells will be maintained indefinitely.

2.5 Surface Streams.

Surface water and sediment quality was monitored over time for both Cold Creek and Burnt Bridge Creek. For each stream, upstream and downstream locations were selected to evaluate the potential contribution of contaminants from the site.

In Cold Creek, contaminant concentrations were similar for both upstream and downstream locations suggesting off-site sources. Contaminant concentrations in Burnt Bridge Creek were equal to or higher at the upstream locations than they were at the downstream locations again indicating that the site is not a significant source of contamination. Since the results of the Remedial Investigation indicated that neither Cold Creek nor Burnt Bridge Creek posed unacceptable risks to human health or the environment, **no further action** was required for either surface water or sediments at these locations.

Cold Creek and Burnt Bridge Creek are not subject to the Five – Year Review.

V. ADDITIONAL RESPONSE ACTIONS

The Washington State Department of Ecology determined that because some compounds of concern were above soil cleanup levels specified by the Model Toxics Control Act (MTCA), seven waste units in Operable Unit A required further action.

The seven waste units identified by the State were:

Sand Blast Area
Laboratory Waste Storage Area

Wood Pole Area South
Hazardous Waste Storage Building
Paint Shop
Untanking Tower
DOB-1 Drainline

These seven waste units contained localized surface soil contamination associated with HPAHs, PCBs, lead, arsenic and antimony.

BPA undertook an independent cleanup action at these sites on June 15, 1992. The removal actions involved the excavation of the contaminated soil and depending on their constituents, soil removed from these waste units was disposed of at either Chemical Waste Landfill (RCRA landfill) or at the Columbia Ridge Landfill (solid waste landfill), both in Arlington, Oregon.

Following excavation and removal, confirmatory soil samples were collected and submitted for chemical analysis to verify that soil concentrations were below MTCA residential soil cleanup levels. The removal actions were completed on July 6, 1992.

The Sand Blast Area, Laboratory Waste Storage Area, Wood Pole Area South, Hazardous Waste Storage Building, Paint Shop, Untanking Tower and DOB-1 Drainline are not subject to the Five-Year Review because all hazardous materials have been removed and there are no restrictions on use.

VI. NO FURTHER ACTION UNITS and REMEDIAL ACTION ASSESSMENT

Based on the site investigation results, neither the EPA nor the State required any further action at the remaining ten waste units in Operable Unit A. These waste units included:

DOB-2 Drainfield
Van's Way Oil Storage Area
Utilization & Disposal Yard
Herbicide Storage Area
Paint Storage Facility
Temporary Paint Storage Area
PCB Storage Building
Ellen Davis Trail
Oil Water Separators

Since there was no evidence of contamination at any of these waste units, there were no restrictions on use or exposure. **Therefore, none of the above waste units are subject to the Five-Year Review.**

On December 15, 1995, the EPA project manager conducted a site visit and determined that all remedial action had been successfully executed. On September 23, 1996, the BPA Ross Complex was deleted from the NPL.

An Explanation of Significant Differences (ESD) was developed to clarify and document the Institutional Controls required for various areas of the Site. The primary objective of the Institutional Controls are to restrict access, document remaining contamination, establish procedures for monitoring and maintenance of the controls, and to restrict future use in accordance with residual contamination. All areas subject to institutional controls are identified and maintained on a Ross Complex I/C Units Map (see Attachment #1) which is available on an electronic database.

Institutional Control requirements for the Ross Complex are documented in a December 7, 2000 memorandum from the Transmission Business Line Senior Vice President. The memo designates the Facility Management organization with coordinating the Dig Permit process. Program monitoring and quarterly inspections of Institutional Control areas are conducted by the Ross Environmental Coordinator. In addition, the ESD is incorporated as a permit condition of the Ross Complex HazMat facility Dangerous Waste Permit.

Table 2: Five Ross Institutional Control Areas, 2014-2019

IC Area	IC Name	Contaminants of Concern	Control Measures
1	Fog Chamber Dump Area #1	Subsurface Contamination: -PCBs up to 36,000ppm -Metals -Herbicide Controls -HPAHs	-Land Fill with MFS (Impervious) Engineered Cap with Perimeter Drainage Collection System -Permanent security fence around area -Posted "No Digging" inside fence, "Hazardous Waste Landfill" outside of fence -Quarterly Inspections of cap, perimeter fencing and perimeter drainage cleanouts
2	Fog Chamber Dump Area #2	Subsurface Contamination: -Non-process solid wastes such as: wires, cables, lead sheathing -Lead and other metals above state cleanup levels -HPAHs	-1-2 foot clean fill material cover -Land use restrictions on activities which may disturb subsurface contamination -Quarterly Inspections
3	230KV Capacitor Yard	Surficial Gravel and Subsurface Contamination with PCBs <10ppm	-Restricted Entry to energized yard -Restrictions on digging and no change in existing land use -Quarterly Inspections
4	Cold Creek Fill Area	Suspected subsurface contamination- -PCB contaminated soil -Metals above background	-5+ Foot Clean Cap -Restrictions on Digging -Quarterly Inspections
5	Wood Pole Storage Area, East	Subsurface contamination -HPAH and PCP up to 10-15ppm (1ppm & 8ppm cleanup targets, Respectively)	-6 Inch Clean Gravel Cap -Restrictions on Digging and Land Use -Quarterly Inspections

Additional site information, including the fourth Five-Year Review completed in 2014, is available on the EPAs Superfund Site Profile: <https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=1001106>

VII. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the **last** five-year review as well as

the recommendations from the **last** five-year review and the current status of those recommendations.

Table 3: Protectiveness Determinations/Statements from the 2014 FYR

OU #	Protectiveness Determination	Protectiveness Statement
A	Protective	The remedies for both OUA and OUB remain protective of human health and the environment. Because the remedial actions at all OUs are protective and the site is protective of human health and the environment. All threats at the site have been addressed through excavation and off-site disposal and/or capping of contaminated soil, the installation of fencing and warning signs, and the implementation of institutional controls.
B	Protective	
Sitewide	Protective	

Quarterly inspections and annual monitoring have continued during this five year period. No significant threats have been identified at any time during this five-year period regarding the cap, fencing or signage at those sites inspected. The dig permit system is working as intended.

VIII. FIVE-YEAR REVIEW PROCESS

1.1 Administrative Components

Preparation for the Five-Year Review began on September 26, 2018. A target schedule was established to complete all review activities by March 29, 2019. This Five-Year Review was led by Andrew Chang, Environmental Coordinator for the BPA Ross Complex.

1.2 Community Involvement

Since the site deletion from the NPL, community interest in this site has remained low. During the previous Five-Year Reviews, BPA reached out to members of the community living nearest to the Ross Complex facility and received no comments or concerns. Therefore, no interviews were specifically scheduled for this review. In order to notify the community and provide an opportunity for community involvement, BPA is scheduled to publish a notice in The Columbian newspaper on **February 26 through April 26 2019** to inform the public that a Five-Year Review at the BPA/Ross Complex Superfund site was underway. This notice informs the public that there is an opportunity to contact BPA with information or questions. Previous Five-Year Reviews can be found at the EPA Web site:

<https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.scs&id=1001106&doc=Y&colid=31146®ion=10&type=SC>

1.3 Document Review

This Five-Year Review consisted of a review of relevant documents listed in Attachment 2, including The Superfund Final Closeout Report, the Explanation of Significant Differences document and subsequent progress reports.

1.4 Site Inspection

Inspections at the site are conducted on a regular (quarterly) basis by The Ross Complex Environmental Coordinator. The most recent quarterly inspection conducted during this fifth Five-Year Review period was completed on November 8, 2018. In addition, BPA conducted an inspection with EPA on

November 29, 2018. The purpose of the inspections is to assess the protectiveness of the remedy, including the presence of fencing to restrict access, signage, and the integrity of the cap for Fog Chamber Dump, Trench Area 1 and the Wood Pole Storage Yard East. Consistent with the ESD (2009), findings from the quarterly monitoring reports are to be documented in annual monitoring reports to EPA. However, it was noted during this review that the previous three monitoring reports were not submitted due to staff turnover at both BPA and EPA. The reports for 2014-2018 were subsequently submitted to EPA and have been received as of February 2019. No issues with the institutional controls were noted through the 2014-2018 period.

The institutional controls implemented in accordance with the ESD include: delineation, mapping and posting of waste units containing residual contamination; development/implementation of a dig permit system, coordinated by Facilities Management, for any excavation on the complex; permanent placarding of all areas subject to institutional controls; quarterly inspection of sites and annual reporting to EPA by the Environmental Coordinator. No activities were observed that would have violated the institutional controls. All areas subject to institutional controls are identified and maintained on a Ross Complex IC Units Map (**Attachment 1**) which is available on an electronic database. The dig permit system continues to work well and continuous outreach efforts are made inform working groups at Ross about the significance of avoid impacts to the IC areas.

1.5 Sites Subject to Institutional Controls and Five-Year Review:

1.5.1. Wood Pole Storage Yard East:

The historic source of contamination was leachate from stored utility poles that were treated with creosote and PCP. Consistent with the ROD, 2,300 cubic yards of contaminated soil was excavated and treated through ex-situ enhanced solid-phase bioremediation. Of the total volume of excavated material in 1996, 700 cubic yards failed to meet the ROD cleanup level of 1 ppm for HPAHs and 8 ppm for PCP. This volume was spread in a thin layer on the southwest corner of the wood pole storage area. A 6 inch clean cap was applied to the entire area, covering both the treated clean fill and residual contaminated material in the southwest corner. The southwest corner is covered by institutional controls that restrict digging and is designated as Institutional Control Area 5 (ICA#5) of OUA (surface). The institutional controls are only maintained on the southwest corner of the yard that contains residual contamination.

Wood poles are no longer stored in this area, and the institutional controls have remained in place. In 2015, BPA's Environmental Coordinator contacted the EPA RMP, Kevin Rochlin about removing the remaining residual contamination located in the southwest corner. BPA and the EPA RPM agreed to remove the remaining residual contamination, located in the SW corner, so that the ICs could be removed. In early 2016 a total of 2,159 tons of rock and soil were removed to an approved landfill. Randomly selected representative grid sampling at maximum depth of excavation showed Non-Detect all for both HPAH species and PCP, indicating that the contaminants of concern were removed during the 2016 action. BPA is currently working with EPA to evaluate whether QA requirements have been met so that the institutional controls at the Wood Pole Storage Yard East can be removed.

1.5.2. Fog Chamber Dump, Trench Area 1:

This area remains a closed and capped landfill. The area is fenced and posted with "Hazardous Waste Landfill – No Unauthorized Entry" signs. Inspections conducted during the last Five-Year Review period have indicated no disturbance of the cap or perimeter fencing. Signs remain intact and site

drainage is functioning. A review of relevant information and site inspections indicates that the remedy is functioning as intended for this area.

No changes to this area have been observed since the last Five-Year Review.

1.5.3. Fog Chamber Dump, Trench Area 2:

The remedy for this area was institutional controls consisting of restrictions on land use activities that might disturb subsurface contamination. The perimeter of this area has been posted and inspections indicate there has been no unauthorized disturbance of soils. A review of relevant information and site inspections indicates that the remedy continues to function as intended for this area.

There have been no changes in this area since the last Five-Year Review.

1.5.4 Ross Capacitor Yard:

There are no changes in this area since the last Five-Year Review. Land use in this area continues as industrial. The area is an active high voltage capacitor yard. The area remains fenced and posted with high voltage signs. No access is allowed without an electrical outage. There has been no disturbance of soils in this area. A review of relevant information and site inspections indicates that the remedy is functioning as intended for this area.

1.5.5 Cold Creek Fill Area:

There have been no changes in this area since the last Five-Year Review. “No Digging” signs remain posted on as well as inside the access gate #9 to this area. A review of the relevant information and site inspections indicates that the remedy continues to function as intended for this area.

During the inspection on November 29, 2018, it was noted that the lower sign had slid down its post and was partially obstructed by vegetation. This was subsequently reattached in plain view. Additionally, signs of illegal camping were noted within the Cold Creek Fill Area. BPA has posted additional signage to deter trespassing and will continue to monitor for illegal trespassing. Because the area is located adjacent to an active rail line, complete enclosure or fencing is impracticable.

IX. TECHNICAL ASSESSMENT

1. QUESTION A: Is the remedy functioning as intended by the decision documents?

Yes.

Review of documents, ARARs, and results of site inspections and interviews indicates that the remedy is functioning as intended by the RODs for both OUA and OUB, as modified by the ESD. The stabilization and capping of contaminated soils has achieved the remedial objectives to minimize the migration of contaminants to groundwater and surface water and prevent direct contact with, or ingestion of contaminants in soil.

Operation and maintenance of the caps has been effective. The caps appear to be in good condition, with no signs of erosion, cracks or disturbance. Annual costs have been minimal and essentially consist of staff time for inspections and minor maintenance including sign reposting. There have been no indications that the remedies are not protective.

The institutional controls in place appear to be effective in preventing disturbance of the caps and other activities that would interfere with the remedy. Fencing and signage appear to be in good repair. Inspections and use of dig permits under provisions of the ESD appear to be functioning well.

2. QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

No.

In 2017, EP posted revised toxicity values for benzo(a)pyrene, which was used in the ROD to establish cleanup levels for cPAHs. While the new carcinogenic potency from inhalation increased, this increase is outweighed by decreases to oral potency which contribute more heavily to overall carcinogenic risk. Additionally, cleanup levels based on carcinogenic risk remain lower than cleanup levels based on new non-cancer toxicity values for benzo(a)pyrene. **As a result, the overall estimated risk has not increased since remedy selection**

In January 2017, EPA finalized a risk assessment for benzo(a)pyrene that included a revised assessment of cancer potency, and for the first time, an assessment of noncancer toxicity. The revised assessment found that cancer potency via oral exposure is lower than previously thought, and slightly greater risk than previously though via inhalation exposure. The new oral slope factor is 1 per mg/kg-day versus the previous assessment of 7.3 per mg/kg-day. The end result is that cleanup goals calculated assuming only oral exposures would increase by approximately a factor of 7 using the revised assessment. The revised inhalation unit risk is 6E-4 per $\mu\text{g}/\text{m}^3$ versus 1.1E-4 per $\mu\text{g}/\text{m}^3$. Inhalation exposure to contamination in soil does not contribute significantly to overall risk, relative to orals exposure, particularly for semi-volatile chemicals. Thus, the increased potency through inhalation is more than offset by the decrease in oral potency due to the relatively contributions of each to overall carcinogenic risk. Additionally, while the new noncancer toxicity allows us to calculate cleanup goals based on noncancer effects, that value remains greater than cleanup levels based on carcinogenic risk.

There have been no changes in the exposure pathways that would affect the protectiveness of the IC remedy. All IC Units remain protected by caps, removal, fencing or a combination of the three.

3. QUESTION C: Has any **other** information come to light that could call into question the protectiveness of the remedy?

No.

There is no other information that calls into question the protectiveness of the remedy.

X. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
<i>Ross Complex OUA and OUB did not show issues needing remedy</i>
Issues and Recommendations Identified in the Five-Year Review: None

Quarterly inspections and annual monitoring have continued during this five year period. No significant threats have been identified at any time during this five-year period regarding the cap, fencing or signage at those sites inspected. Evidence of transient camping has been noted in ICA 4 (the Cold Creek Dump Site). The camping is not endangering the capped area, and additional “No Trespassing” and “No Dig” warning signs have been posted to discourage public access. The dig permit system is working as intended.

XI. PROTECTIVENESS STATEMENT

<i>Protectiveness Statement(s)</i>	
<i>Operable Unit: A</i>	<i>Protectiveness Determination:</i> <i>Protective</i>
<i>Protectiveness Statement:</i> The remedy at OUA is protective of human health and the environment	

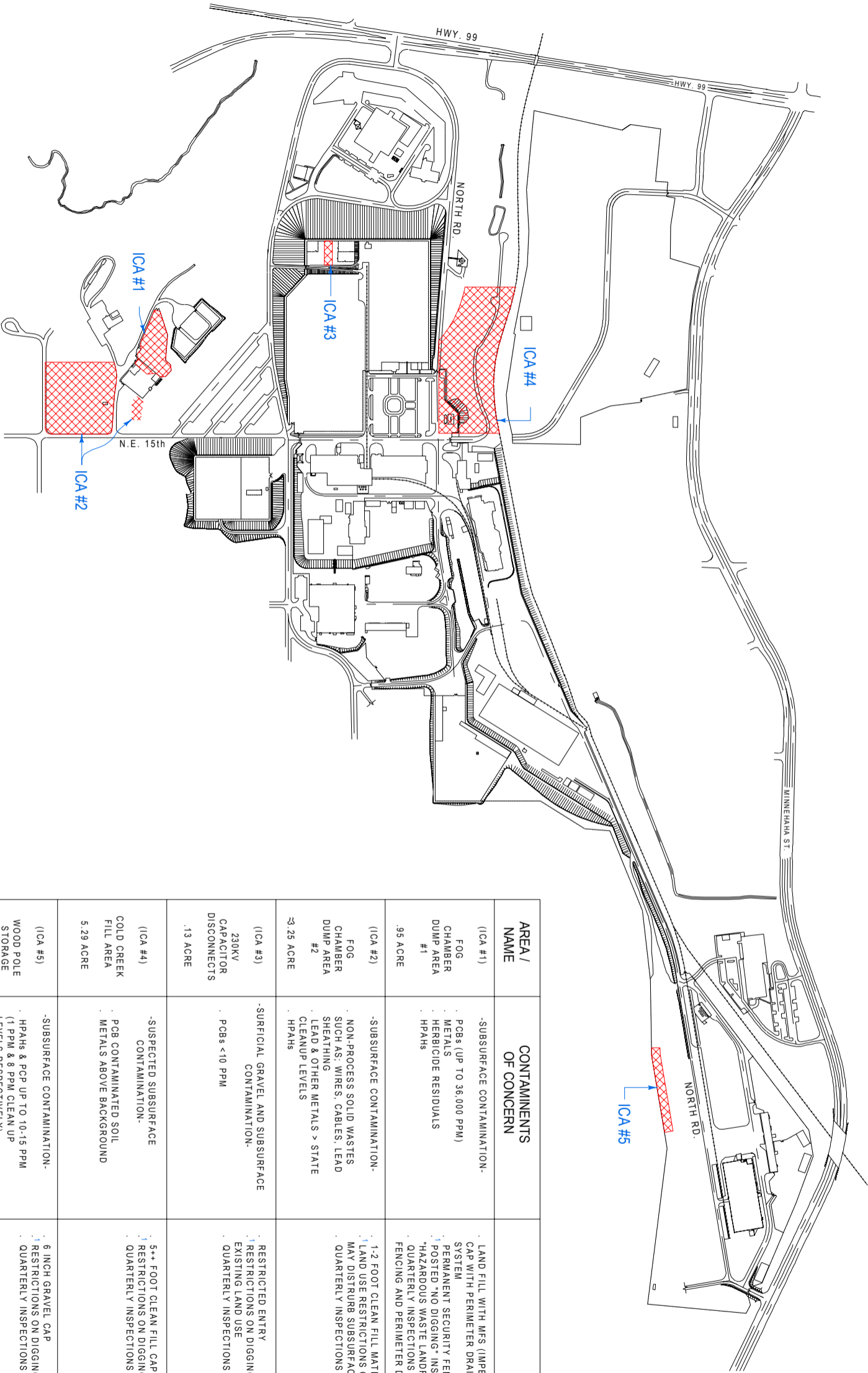
Protectiveness Statement(s)	
<i>Operable Unit: B</i>	<i>Protectiveness Determination:</i> <i>Protective</i>
<i>Protectiveness Statement:</i> The remedy at OUB is protective of human health and the environment	

Sitewide Protectiveness Statement	
<i>Protectiveness Determination:</i> <i>Protective</i>	
<i>Protectiveness Statement:</i> Remedies sitewide continue to be protective of human health and the environment	

XII. NEXT REVIEW

The next five-year review report for the Ross Complex Superfund Site is required five years from the completion date of this review.

APPENDIX A- BPA ROSS I/C LOCATIONS



AREA / NAME	CONTAMINENTS OF CONCERN	CONTROL MEASURES	SEE FIG#
(ICA #1) FOG CHAMBER DUMP AREA #1 .95 ACRE	-SUBSURFACE CONTAMINATION- PCBs (UP TO 36,000 PPM) METALS HERBICIDE RESIDUALS HPAHs	· LAND FILL WITH MFS (IMPERVIOUS) ENGINEERED CAP WITH PERIMETER DRAINAGE COLLECTION SYSTEM · PERMANENT SECURITY FENCE AROUND AREA · POSTED "NO DIGGING" INSIDE OF FENCE · "HAZARDOUS WASTE LANDFILL" OUTSIDE FENCE · QUARTERLY INSPECTIONS OF CAP, PERIMETER FENCING AND PERIMETER DRAINAGE CLEANOUTS	FIG #1
(ICA #2) FOG CHAMBER DUMP AREA #2 ≈.25 ACRE	-SUBSURFACE CONTAMINATION- NON-PROCESS SOLID WASTES SUCH AS: WIRES, CABLES, LEAD SHEATHING LEAD & OTHER METALS > STATE CLEANUP LEVELS HPAHs	· 1-2 FOOT CLEAN FILL MATERIAL COVER · LAND USE RESTRICTIONS ON ACTIVITIES WHICH MAY DISTURB SUBSURFACE CONTAMINATION · QUARTERLY INSPECTIONS	FIG #1
(ICA #3) 230KV CAPACITOR DISCONNECTS .13 ACRE	-SURFICIAL GRAVEL AND SUBSURFACE CONTAMINATION- PCBs <10 PPM	· RESTRICTED ENTRY · RESTRICTIONS ON DIGGING AND NO CHANGE IN EXISTING LAND USE · QUARTERLY INSPECTIONS	FIG #2
(ICA #4) COLD CREEK FILL AREA 5.29 ACRE	-SUSPECTED SUBSURFACE CONTAMINATION- PCB CONTAMINATED SOIL METALS ABOVE BACKGROUND	· 5+++ FOOT CLEAN FILL CAP · RESTRICTIONS ON DIGGING · QUARTERLY INSPECTIONS	FIG #3
(ICA #5) WOOD POLE STORAGE AREA, EAST .47 ACRE	-SUBSURFACE CONTAMINATION- HPAHs & PCP UP TO 10-15 PPM (1 PPM & 8 PPM CLEAN UP LEVELS RESPECTIVELY)	· 6 INCH GRAVEL CAP · RESTRICTIONS ON DIGGING & LAND USE · QUARTERLY INSPECTIONS	FIG #4

¹ CONTACT BUILDING & GROUNDS MANAGER, OR ROSS ENVIRONMENTAL COORDINATOR PRIOR TO DISTURBING ANY SOIL.

2	W.O.	ADDED "OFFICAL USE ONLY" TO DRAWING	BEB	8/31/04	SH
1	W.O.	ADDED APPROX. .04 ACRES TO ICA #2	BEB	11/28/00	SH
NO.	W.O.	COMPUTER REVISION ONLY	BY	DATE	APPROVED

Drawn	_____	UNITED STATES DEPARTMENT OF ENERGY BONNEVILLE POWER ADMINISTRATION HEADQUARTERS, PORTLAND, OREGON
Envsrp	_____	
CHK'd	_____	
Appr	_____	

ROSS COMPLEX
INSTITUTIONAL CONTROL AREA
(ICAs)
SITE PLAN

SERIAL	SOURCE	SIZE	SHEET	REVISION
258317	KEP	A1	1 OF 2	1

**EXPLANATION OF SIGNIFICANT DIFFERENCES
for the
Bonneville Power Administration
Ross Complex
Vancouver, Washington**

INTRODUCTION

This document presents an Explanation of Significant Differences (ESD) for two Records of Decision (RODs) for the BPA Ross Complex. The Bonneville Power Administration (BPA), the United States Environmental Protection Agency (EPA), and the Washington State Department of Ecology (WDOE) signed these RODs. The RODs addressed by the ESD are:

1. OUA ROD, May 6, 1993, addressing surface contamination
2. OUB ROD, September 29, 1993, addressing groundwater and contamination at depth.

This ESD, prepared in accordance with Section 117(c) of CERCLA and 40 CFR 300.435(c)(2)(I), documents significant differences to the selected remedies in the RODs. In summary, this ESD clarifies the institutional control requirements for individual sites within these RODs, as well as establishes the general requirements that BPA's Ross Complex will undertake to ensure effective institutional controls for these individual sites. The WDOE supports the need for this ESD.

This ESD will become part of the Administrative Record for the Ross Complex. The Administrative Record is located at 5411 NE Hwy. 99; Vancouver; Washington, (360) 418-2554. This ESD will also be available at the Information Repository at the Vancouver Regional Library located at 1007 East Mill Plain Blvd., Vancouver, Washington (360) 695-1566.

SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

The BPA Ross Complex is an active 250-acre installation located in Clark County Washington. The site is located approximately 2.7 miles north of the Columbia River and 1.7 miles east of Vancouver Lake. The site is bordered to the north by Cold Creek Canyon, a Burlington Northern Railroad right-of-way, NE Minnehaha Street, and to the east and south by a residential neighborhood. Burnt Bridge Creek borders the site to the southwest and west. Highway 99 and Interstate 5 borders the site to the west. The two streams, which border the site, flow into Vancouver Lake.

The site is an active facility that has been owned and operated by BPA since 1939 to coordinate the distribution of hydroelectric power generated by the Federal Columbia

River Power System to regions throughout the Pacific Northwest. Since it's construction, the Site has provided research and testing facilities, maintenance and construction operations, and waste storage and handling operations for BPA. Maintenance activities at the Ross Complex have routinely involved handling transformer oils containing polychlorinated biphenyls (PCBs), and organic and inorganic compounds associated with the storage of preserved wood transmission poles, paints, solvents, and waste oils. Testing and laboratory activities include the use of heavy metals (such as mercury) and other organic and inorganic compounds.

The site was listed on the National Priorities List (NPL) in November 1989 based on the presence of volatile organic compounds (VOCs) in groundwater and the Site's proximity to the City of Vancouver's drinking water supply. As a result of the listing, and pursuant to a Federal Facility Agreement (FFA) signed by BPA, EPA and WDOE on May 1, 1990, BPA conducted a Remedial Investigation/Feasibility Study (RI/FS). The RI/FS was conducted to determine the nature and extent of contamination at the site, and to evaluate alternatives for the clean up of contaminated areas. The RI field investigation began in the summer of 1991, and included the collection and chemical analysis of surface and subsurface soil, water, sediment, and groundwater samples.

Initially, the RI was designed to address the entire Site but, during the summer of 1991, BPA, EPA and WDOE decided that the Site would be divided into two separate operable units (Units A and B) to facilitate the CERCLA process. Operable Unit A Remedial Investigation focused on an evaluation of surface soil contamination at a total of 19 waste units on the site. Operable Unit B Remedial Investigation focused on characterization of subsurface soils at the Fog Chamber Dump Trench Areas 1 and 2 and the Cold Creek Fill Area. The Operable Unit B investigation also included characterization of the shallow perched water table and deep groundwater aquifer beneath the site, and surface water and sediment in Cold Creek and Burnt Bridge Creek.

The Final RI/FS for OUA was issued on May 15, 1992, and the OUA ROD was signed on May 6, 1993. The Final RI/FS for OUB was issued on March 19, 1993, and the OUB ROD was signed on September 29, 1993.

All remedial actions for OUA have been completed. Treatment for PCP contaminated soil from the Wood Pole Storage Yard East was completed on November 30, 1995. PCB contaminated soil was removed from the Capacitor Test Lab in January 1994, and from the Ross Substation and Capacitor Yard in August 1995.

It was determined in the ROD that the remedial action for Operable Unit B would be limited to capping or covering the Fog Chamber Dump, Trench Area 1; the establishment of Institutional Controls at Fog Chamber Dump, Trench Area 2; and continued monitoring of volatile organic compounds in groundwater. Installation of the cap at the Fog Chamber Dump was completed in October of 1994. Groundwater

monitoring was discontinued in April 1996 when results demonstrated that conditions were stable and contaminants were nearly at or below Maximum Contaminant Levels (MCLs). The BPA Ross Complex was delisted from the NPL on September 23, 1996.

The Remedial Action Objectives and the major components of the remedies selected in these RODs are summarized in Attachment A, particularly as they relate to institutional controls and the need for institutional controls. The RODs should be consulted for a full description of the selected remedies.

DESCRIPTION OF THE SIGNIFICANT DIFFERENCE AND THE BASIS FOR THOSE DIFFERENCES

Institutional controls are being relied upon to protect human health and the environment at five locations at the Ross Complex. Where the RODs require institutional controls, the RODs lack detail on the site-specific institutional control including the geographic locations where such controls are required, the objectives of the control or restriction, and a description of the types of restrictions that need to be in place. The RODs are also silent on how these institutional controls will be implemented, maintained and monitored, both while the BPA has control of the property as well as what will happen if the property is transferred to other Federal agencies or to private ownership. This ESD clarifies the site-specific institutional control requirements and establishes the procedures for how BPA will implement maintain and monitor these site-specific requirements.

Although these institutional controls have been adhered to and remain protective of human health and the environment, the CERCLA five year review, completed in August 1999, recommended that BPA develop a strategy to better provide for the long term administration, implementation and maintenance of institutional controls.

Site-Specific Institutional Control Requirements

Attachment B contains the revised site-specific institutional control requirements for every site/remedy listed on Attachment A that includes any form of institutional controls. These revised requirements clarify the geographic location where each institutional control is required, the objective of the control or restriction, and, as appropriate, a description of the types of restrictions that need to be in place.

In the process of reviewing the RODs for the Ross Complex, the agencies realized that there were two additional sites (Ross Substation Capacitor Yard and Cold Creek Fill) that require institutional controls for short and long term protection of human health and the environment. The remedy selected for these sites in the 1993 RODs had assumed that current and future land uses would be limited, but did not expressly require that those restrictions stay in place. This ESD adds the requirement that those restrictions stay in place. Attachment B also contains the site-specific institutional control

requirements for these sites, as well as the reason why these controls are needed.

Facility-Wide Institutional Control Requirements

Attachment C contains the facility-wide institutional control requirements. Together, these facility-wide institutional control requirements establish the procedures and processes the Ross Complex will use to develop, implement, and monitor the site-specific institutional control requirements described above

Together, the remedial requirements described in Attachments B and C should result in remedial actions that improve the short-term and long-term protectiveness to human health and the environment.

The Applicable, Relevant, and Appropriate Remedies (ARARs) established in the RODs are not modified by this ESD. This ESD is in furtherance of a new To-Be-Considered requirement, the EPA Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities, May 3, 1999.

Public Participation Activities

The BPA will publish a notice of availability and a brief description of this ESD in the local newspaper, the Vancouver COLUMBIAN.

For more information on this ESD the public may contact Ms. Elaine Stratton, Ross Complex Environmental Coordinator, at (360) 418-2554.

Affirmation of the Statutory Determinations

Considering the new information that has been developed as well as changes that have been made to the selected remedies, the BPA and the EPA believe that:

- The remedies remain protective of human health and the environment,
- The remedies comply with Federal and State requirements that were identified in the RODs as applicable or relevant and appropriate to these remedial actions at the time of the original ROD, and
- The remedies are cost-effective.
- In addition, the revised remedies continue to utilize permanent solutions and alternative treatment technologies to the maximum extent practicable for these sites.

Mark Maher
Senior Vice President
Transmission Business Line

Date

Michael F. Gearheard
Director, Environmental Cleanup Office
EPA, Region 10

Date

ATTACHMENT A

A Summary of the Remedial Action Objectives and Selected Remedial Actions from the RODs at the BPA Ross Complex

OUA ROD, May 6, 1993

Three waste units; the Wood Pole Storage Area East, the Ross Substation and Capacitor Yard, and the Capacitor Testing Lab were identified as requiring action under CERCLA.

Remedial Action Objectives

Reduce potential for occupational exposure by achieving soil cleanup levels specified by Washington State's Model Toxic Cleanup Act (MTCA).

Site	Contaminant	Soil Cleanup Level Specified
Wood Pole Storage Yard	Total HPAHs	1 ppm (MTCA Method A, residential)
	Pentachlorophenol	8 ppm (MTCA Method B, residential)
Ross Substation and Capacitor Yard	Total PCBs	10 ppm (MTCA Method A, industrial)
Capacitor Test Lab	Total PCBs	1 ppm (MTCA Method A residential)

Selected Remedies

Site	Remedy
Wood Pole Storage Yard	Ex-situ Solid-Phase Bioremediation with enhancements. If cleanup levels could not be met then soils were to be returned to yard, the yard capped and institutional controls applied
Ross Substation and Capacitor Yard	Excavation and off-site disposal. Industrial soil cleanup standard with fencing and deed restrictions
Capacitor Test Lab	Excavation and off-site disposal. Residential soil cleanup standard.

OUB ROD SEPTEMBER 29,1993

Two waste units; the Fog Chamber Dump Trench Area 1 and Fog Chamber DumpTrench Area 2 were identified as requiring action under CERCLA.

Remedial Action Objectives

The remedial action objectives for both OUB sites were:

- To prevent direct contact with contaminated soil
- To prevent future disturbance of contaminated soil
- To prevent surface water infiltration
- To create an area at the Fog Chamber Dump Trench Area that can be used by BPA for storage of heavy equipment

Selected Remedies

Site	Remedy
Fog Chamber Dump Trench Area 1	Installation of MFS cap with institutional controls. Institutional controls will limit access through the use of fencing, deed and land use restrictions
Fog Chamber Dump Trench Area 2	Institutional controls including deed and land use restrictions will be used to restrict land use activities that may disturb subsurface contamination

ATTACHMENT B

Revised Site-specific Institutional Control Requirements

OUA ROD, MAY 6, 1993

Wood Pole Storage Yard East.

This waste unit is located in the northeast corner of the Ross Complex. Of the 2,300 cubic yards of soil excavated from the pole yard, about 700 cubic yards failed to meet the ROD cleanup levels. After treatment, the soils that still exceeded cleanup levels were placed in a thin layer in the southwest corner of the pole yard. A clean cap was then applied over the entire 4.2-acre yard. Institutional controls are required only for the southwest corner of the yard that contains the residual contaminated soils. The institutional control objectives listed below must be met for this portion of the Wood Pole Yard.

- Ensure that the land use for that portion of the yard remains industrial
- Ensure that all disturbed or excavated soil from the site are properly categorized and disposed of, and that workers are protected during any such excavation or disturbance
- Ensure that these restrictions apply now and in the future, even if the Bonneville Power Administration no longer has control of the property
- Ensure that these restrictions will run with the land if the property is no longer Federally owned

Comment: These institutional control requirements are needed to ensure site limitations that were assumed during the remedy selection are implemented and maintained.

Ross Substation and Capacitor Yard

This waste unit is located in the central portion of the Ross Complex. The capacitor yard is a small area in the southwestern corner of the substation yard. Due to the electrical hazards involved, the substation is enclosed in a security fence and access to the substation has always been strictly controlled. The Capacitor Yard itself is fenced off from the substation proper. All contaminated soil was removed down to non-detection levels except for a small area that interconnects capacitor banks. In that area, PCB-contaminated soil with up to 10 ppm (industrial cleanup level) was left in place. The institutional control objectives listed below must be met for this portion of the capacitor yard.

- Ensure that land use at the capacitor yard remains industrial
- Ensure that all disturbed or excavated soils at or from the site are properly

categorized and disposed of, and that workers are protected during any such disturbance or excavation

- Ensure that these restrictions apply now and in the future, even if the Bonneville Power Administration no longer has control of the property.
- Ensure that these restrictions will run with the land if the property is no longer Federally owned.

Comment: These institutional control requirements are needed to ensure use limitations that were assumed during remedy selection.

OUB ROD, SEPTEMBER 29, 1993

Fog Chamber Dump Trench Area 1.

The institutional control objectives listed below must be met at this waste unit which is located in the southeastern corner of the Complex. It is currently fenced and placarded.

- Prevent any disturbance to the cap, except as necessary for authorized O&M cap maintenance activities
- Prevent any current or future land uses that could jeopardize the integrity or life of the cap
- Notify the EPA prior to any development or redevelopment of the landfill site. The object of this notification is to ensure that the agencies concur that the development has been designed to retain the integrity of, and to avoid damage to, the cap
- Ensure that these restrictions apply now and in the future, even if Bonneville Power no longer has control of the property
- Ensure that these restrictions will run with the land if the property is no longer Federally owned.

Comment: These institutional control requirements are to replace the requirement for deed restrictions stated in the 1993 ROD.

Fog Chamber Dump Trench Area 2

The institutional control objectives listed below must be met at this waste unit which is located immediately adjacent to Fog Chamber Dump Trench Area 1. The area is currently placarded.

- Restrict land use to prevent unauthorized soil disturbance.
- If any soils are disturbed, ensure that all disturbed or excavated soils at or from the site are properly categorized and disposed of, and that workers are protected during

any such disturbance or excavation

- Ensure that these restrictions apply now and in the future, even if the Bonneville Power Administration no longer has control of the property
- Ensure that these restrictions will run with the land if the property is no longer Federally owned.
- Comment: These institutional control requirements are to replace the requirement **for deed restrictions in the 1993 ROD.**

Cold Creek Fill

The Cold Creek Fill area is located in the central portion of the Complex just North of the Ross Substation. This area consists of an engineered fill that has been continually compacted and graded over time with soil obtained from construction projects on the Complex. Based upon results in the RI it was determined that the existing conditions at this location were protective of public health and the environment, therefore remedial action was not necessary. Existing conditions included only limited isolated soil contamination between 5 and 25 feet below ground surface; relatively immobile contamination potential due to the types of contaminants; low permeability characteristics of the fill and access restricted by fencing and topographic considerations. The area is currently placarded at the entry gate.

To ensure that conditions that lead to the No Further Action determination do not change over time the following institutional control objectives are being added:

- Restrict land use to prevent soils from being disturbed.
- If disturbance of the soils becomes necessary, ensure that all disturbed or excavated soils at or from the site are properly categorized and disposed of, and that workers are protected during any such disturbance or excavation
- Ensure that these restrictions apply now and in the future, even if the Bonneville Power Administration no longer has control of the property
- Ensure that these restrictions will run with the land if the property is no longer Federally owned.

Comment: These institutional control requirements are needed to ensure use limitations that were assumed during remedy selection are implemented and maintained.

ATTACHMENT C

Facility-wide Institutional Control Requirements

The Bonneville Power Administration (BPA)-Ross Complex has recently developed a comprehensive facility-wide approach for establishing, implementing, enforcing, and monitoring institutional controls at the facility. This approach contains procedures that will apply equally to BPA and contractor personnel who might undertake, approve or plan for any work on the Complex that might affect the future land use of these restricted areas. This facility-wide approach requires that:

- All CERCLA waste units containing any residual contamination will be clearly delineated and mapped. New facility maps will be prepared highlighting those locations subject to institutional controls. These maps will be logged into the engineering map vault at BPA headquarters and included in internal web pages for both the Environmental and Transmission Business Lines of BPA.
- Any digging, for any purpose, anywhere on the Complex by either BPA personnel or contractors, will require prior coordination with Ross Facilities Management. Facilities Management will be responsible for coordinating the dig permits. This will give us the broader assurance that an excavation will not threaten underground utilities.
- All areas that are governed by institutional controls will be permanently placarded. These signs will give notice that no digging is to take place without a dig permit.
- EPA and WDOE will be notified prior to any sale or lease of any property subject to institutional controls. Similarly, EPA and WDOE approval will be sought prior to any change in land use designation or restriction that may affect those areas subject to institutional controls.
- The existing Pollution and Abatement Clearance Process will be used as a means of coordination across business lines. The PAC process typically requires an environmental evaluation prior to excavation. The Project Manager, or proposing office, will be responsible for initiating the PAC request. The PAC report, issued by Pollution Control and Abatement through Facilities Management, will serve as the dig permit.
- The Environmental Coordinator for the Ross Complex will inspect all those locations subject to institutional controls on a quarterly basis as part of BPA's internal appraisal program. Those findings will be documented in an annual monitoring report to EPA.
- The Environmental Coordinator will immediately report any anticipated change in land use to EPA and WDOE.

- The Environmental Coordinator for the Ross Complex will serve as the point-of-contact with EPA on matters relative to CERCLA.

Within six months of signature of this ESD, the BPA Ross Complex will submit to EPA a monitoring report on the status of its institutional controls. BPA will then submit an updated Institutional Control Monitoring Report to EPA at least annually thereafter. After the facility's comprehensive facility-wide approach is well established and the facility has demonstrated its effectiveness, the frequency of future monitoring reports may be modified subject to approval by EPA. The Institutional Control Monitoring Report at a minimum must contain:

1. a description of how the Ross Complex is meeting the facility-wide institutional control requirements;
2. a description of how the Complex is meeting the Operable Unit-specific objectives, including results of visual field inspections of all areas subject to Operable Unit specific restrictions;
3. an evaluation of whether or not all the Operable Unit specific and facility-wide institutional control requirements are being met;
4. a description of any deficiencies and what efforts or measures have been or will be taken to correct problems.

EPA review of the Institutional Control Monitoring Report will follow existing procedures for agency review of documents.

The BPA Ross Complex will notify EPA immediately upon discovery of any activity that is inconsistent with the Operable Unit-specific institutional control objectives for the site, or of any change in the land use or land use designation of a site addressed under item A (I). The facility will work together with EPA to determine a plan of action to rectify the situation. However, in the event the facility believes the activity creates an emergency situation, the facility can respond to the emergency immediately upon notification to EPA and need not wait for EPA input to determine a plan of action. The facility will also identify what went wrong with the institutional control process, evaluate how to correct the process to avoid future problems, and implement these changes after consulting with EPA.

The BPA Ross Complex will notify EPA at least six (6) months prior to any transfer, sale or lease of any property subject to institutional controls so that EPA can be involved in discussions to ensure that appropriate provisions to maintain effective institutional controls are included in the conveyance documents. If it is not possible for the facility to provide six month notification, then EPA will be notified as soon as possible but no later than 60 days prior to the transfer, sale or lease of any property subject to institutional controls.

The BPA Ross Complex will not delete or terminate any institutional control unless EPA has concurred in the deletion or termination.